

Section 2-3 Carbon Compounds (pages 44-48)



Key Concept

- What are the functions of each group of organic compounds?

The Chemistry of Carbon (page 44)

1. How many valence electrons does each carbon atom have? _____

2. What gives carbon the ability to form chains that are almost unlimited in length?

Macromolecules (page 45)

3. Many of the molecules in living cells are so large that they are known as _____.
4. What is the process called by which macromolecules are formed? _____
5. When monomers join together, what do they form? _____
6. What are four groups of organic compounds found in living things?
 - a. _____
 - b. _____
 - c. _____
 - d. _____

Carbohydrates (pages 45-46)

7. What atoms make up carbohydrates? _____

8. Circle the letter of each sentence that is true about carbohydrates.
 - a. Starches and sugars are examples of carbohydrates.
 - b. Living things use them as their main source of energy.
 - c. The monomers in sugar polymers are starch molecules.
 - d. Plants and some animals use them for strength and rigidity.
9. Single sugar molecules are also called _____.
10. Circle the letter of each monosaccharide.
 - a. galactose
 - b. glycogen
 - c. glucose
 - d. fructose

11. What are polysaccharides? _____

12. How do plants and animals store excess sugar? _____

Lipids (pages 46–47)

13. What kinds of atoms are lipids mostly made of? _____

14. What are three common categories of lipids?
 a. _____ b. _____ c. _____
15. Many lipids are formed when a glycerol molecule combines with compounds called _____.
16. Circle the letter of each way that fats are used in living things.
 a. As parts of biological membranes
 b. To store energy
 c. To give plants rigidity
 d. As chemical messengers
17. Complete the table about lipids.

LIPIDS

Kind of Lipid	Description
	Each carbon atom in a lipid's fatty acid chain is joined to another carbon atom by a single bond.
Unsaturated	
	A lipid's fatty acids contain more than one double bond.

Nucleic Acids (page 47)

18. Nucleic acids contain what kinds of atoms? _____

19. The monomers that make up nucleic acids are known as _____.
20. A nucleotide consists of what three parts? _____

21. What is the function of nucleic acids in living things? _____

22. What are two kinds of nucleic acids?
a. _____
b. _____

Proteins (pages 47–48)

23. Proteins contain what kinds of atoms? _____

24. Proteins are polymers of molecules called _____.

25. What are four roles that proteins play in living things?
a. _____
b. _____
c. _____
d. _____

Reading Skill Practice

You can often increase your understanding of what you've read by making comparisons. A compare-and-contrast table helps you to do this. On a separate sheet of paper, make a table to compare the four groups of organic compounds you read about in Section 2–3. You might use the heads Elements, Functions, and Examples for your table. For more information about compare-and-contrast tables, see Organizing Information in Appendix A.

Section 2-4 Chemical Reactions and Enzymes (pages 49-53)

Key Concepts

- What happens to chemical bonds during chemical reactions?
- How do energy changes affect whether a chemical reaction will occur?
- Why are enzymes important to living things?

Chemical Reactions (page 49)

1. What is a chemical reaction? _____

2. In the space provided, write a definition for each of the terms

	Definition
Reactants	
Products	

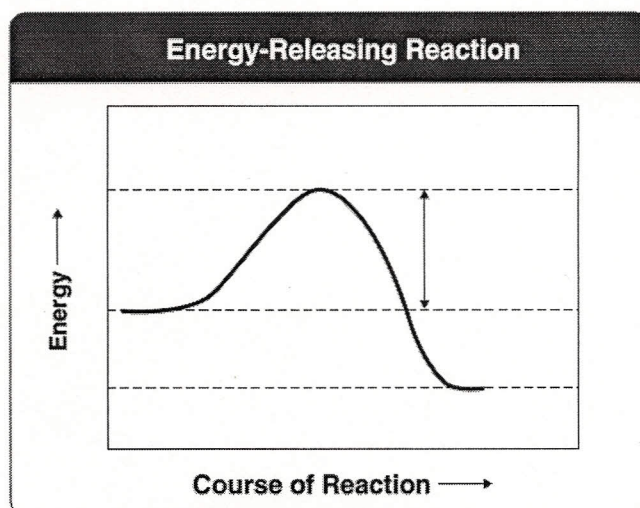
3. Chemical reactions always involve changes in chemical _____.

Energy in Reactions (page 50)

4. What is released or absorbed whenever chemical bonds form or are broken?

5. What do chemical reactions that absorb energy need to occur? _____

6. Chemists call the energy needed to get a reaction started the _____.
7. Complete the graph of an energy-releasing reaction by indicating where the energy of the reactants, the energy of the products, and the activation energy should appear.



Enzymes (pages 51–52)

8. What is a catalyst? _____

9. Proteins that act as biological catalysts are called _____.
10. What do enzymes do? _____

11. What is part of an enzyme's name usually derived from? _____

Enzyme Action (pages 52–53)

12. The reactants of enzyme-catalyzed reactions are known as _____.
13. Why are the active site and the substrates in an enzyme-catalyzed reaction often compared to a lock and key? _____

14. The binding together of an enzyme and a substrate forms a(an) _____.
15. How do most cells regulate the activity of enzymes? _____

